WHAT IS CLAIMED IS:

1. A laser diode module comprising:

a laser diode assembly including a base, a carrier fixed to said base, a laser diode mounted on said carrier, a cap fixed to said base so as to surround said laser diode, and a holder fixed to said base so as to surround said cap;

a lens-fiber assembly including a casing having a first end, a second end, a first hole having a first diameter and a first axis, and a second hole having a second diameter smaller than said first diameter and a second axis offset from said first axis, said second hole communicating with said first hole, a lens inserted and fixed in said first hole from said first end of said casing, and a ferrule with an optical fiber embedded therein, said ferrule having a slant polished first end and a second end, said ferrule being inserted and fixed in said second hole from said second end of said casing so that a given distance is defined between said first end of said ferrule and said lens and that said second end of said ferrule projects from said second end of said casing; and

a sleeve having a first end fixed to said holder and a second end to which said first end of said casing

is fixedly inserted;

said first end of said ferrule being positioned so that a portion of said first end of said ferrule radially farthest from said first axis of said first hole becomes axially farthest from said lens.

2. A laser diode module according to claim 1, wherein the slant angle of said first end of said ferrule is set in the range of about 4° to about 8° with respect to a plane perpendicular to the axis of said ferrule.

3. A laser diode module according to claim 1, wherein said casing further has a third hole for making communication of said first and second holes between said lens and said ferrule with the ambient air, and a pin for closing said third hole.

4. An assembling method for a laser diode module using a lens-fiber assembly including a casing having a first end, a second end, and a through hole, a lens inserted and fixed in said through hole, and a ferrule with an optical fiber embedded therein, said ferrule having a slant polished first end and a second end, said ferrule being inserted and fixed in said through hole so that a given distance is defined between said lens and said first end of said ferrule, said assembling method comprising the steps of:

setting a laser diode assembly having a laser diode and a holder, a sleeve, and said lens-fiber assembly on an assembling jig;

optically connecting an optical power meter to said second end of said ferrule;

bringing a first end of said sleeve into contact with said holder, and inserting said first end of said casing into said sleeve from a second end thereof;

moving said lens-fiber assembly relative to said laser diode along an optical axis and in the directions perpendicular to said optical axis while monitoring the power of a laser beam emitted from said laser diode by using said optical power meter; and

welding said sleeve and said holder and welding said sleeve and said casing at a position where the reading on said optical power meter shows a maximum value.

5. An assembling method for a laser diode module using a lens-fiber assembly including a casing having a first end, a second end, a first hole having a first diameter and a first axis, and a second hole having a second diameter smaller than said first diameter and a second axis offset from said first axis, said second hole communicating with said first hole, a lens inserted and fixed in said first hole from said first end of said

casing, and a ferrule with an optical fiber embedded therein, said ferrule having a slant polished first end and a second end, said ferrule being inserted and fixed in said second hole from said second end of said casing so that a given distance is defined between said first end of said ferrule and said lens and that said second end of said ferrule projects from said second end of said casing, said assembling method comprising the steps of:

setting a laser diode assembly having a laser diode and a holder, a sleeve, and said lens-fiber assembly on an assembling jig;

optically connecting an optical power meter to said second end of said ferrule;

bringing a first end of said sleeve into contact with said holder, and inserting said first end of said casing into said sleeve from a second end thereof;

moving said lens-fiber assembly relative to said laser diode along an optical axis and in the directions perpendicular to said optical axis while monitoring the power of a laser beam emitted from said laser diode by using said optical power meter; and

welding said sleeve and said holder and welding said sleeve and said casing at a position where the reading on said optical power meter shows a maximum value.

6. A laser diode module comprising:

a laser diode assembly including a base, a carrier fixed to said base, a laser diode mounted on said carrier, a cap fixed to said base so as to surround said laser diode, and a holder fixed to said base so as to surround said cap; and

a lens-fiber assembly including a casing having a first end, a second end, a first hole having a first diameter and a first axis, and a second hole having a second diameter smaller than said first diameter and a second axis offset from said first axis, said second hole communicating with said first hole, a lens inserted and fixed in said first hole from said first end of said casing, and a ferrule with an optical fiber embedded therein, said ferrule having a slant polished first end and a second end, said ferrule being inserted and fixed in said second hole from said second end of said casing so that a given distance is defined between said first end of said ferrule and said lens and that said second end of said ferrule projects from said second end of said casing;

said first end of said casing being fixed to said holder;

said first end of said ferrule being positioned so

that a portion of said first end of said ferrule radially farthest from said first axis of said first hole becomes axially farthest from said lens.

7. A laser diode module according to claim 6, wherein the slant angle of said first end of said ferrule is set in the range of about 4° to about 8° with respect to a plane perpendicular to the axis of said ferrule.

8. An assembling method for a laser diode module using a lens-fiber assembly including a casing having a first end, a second end, and a through hole, a lens inserted and fixed in said through hole, and a ferrule with an optical fiber embedded therein, said ferrule having a slant polished first end and a second end, said ferrule being inserted and fixed in said through hole so that a given distance is defined between said lens and said first end of said ferrule, said assembling method comprising the steps of:

setting a laser diode assembly having a laser diode and a holder and said lens-fiber assembly on an assembling jig;

optically connecting an optical power meter to said second end of said ferrule;

bringing said first end of said casing into contact with said holder;

moving said lens-fiber assembly relative to said laser diode in the directions perpendicular to an optical axis while monitoring the power of a laser beam emitted from said laser diode by using said optical power meter; and

welding said casing and said holder at a position where the reading on said optical power meter shows a maximum value.

9. An assembling method for a lens-fiber assembly, comprising the steps of:

preparing a casing having a first end, a second end, a first hole having a first diameter and a first axis, and a second hole having a second diameter smaller than said first diameter and a second axis offset from said first axis, said second hole communicating with said first hole;

inserting a lens from said first end of said casing into said first hole of said casing, and fixing said lens at a given position;

inserting a ferrule having a slant polished first end, a second end, and an optical fiber embedded therein from said second end of said casing into said second hole of said casing so as to satisfy a positional relation that a given distance is defined between said first end

of said ferrule and said lens and that a portion of said first end of said ferrule radially farthest from said first axis of said first hole becomes axially farthest from said lens; and

fixing said ferrule.

10. An assembling method according to claim 9, wherein:

said casing further has a third hole for making communication of said first and second holes between said lens and said ferrule with the ambient air;

said assembling method further comprising the step of closing said third hole.

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11. A laser diode module comprising:

a laser diode; and

a lens-fiber assembly including a casing having a first hole and a second hole offset from said first hole, a lens fixed in said first hole, and an optical fiber provided in said second hole, said lens-fiber assembly guiding a laser beam emitted from said laser diode through said lens to said optical fiber;

said optical fiber being inserted and fixed in a ferrule press-fitted with said second hole.

12. A laser diode module according to claim 11, ~~wherein:~~

said ferrule has a first end inserted in said second hole and a second end projecting from said second hole, said first end of said ferrule being inclined a given angle with respect to the axial direction of said ferrule; and

one of the outer circumferential surface of said ferrule and the wall surface of said casing defining said second hole is formed with an axially extending guide rail, and the other is formed with an axially extending groove adapted to engage said guide rail.

13. A laser diode module according to claim 11, wherein said casing further has a third hole for making communication of said first and second holes between said lens and said ferrule with the ambient air.

14. A manufacturing method for a lens-fiber assembly using a casing having a first hole for insertion of a lens, a second hole for insertion of a ferrule, said second hole communicating with said first hole and being offset from said first hole, and a third hole for making communication of said first and second holes between said lens and said ferrule with the ambient air, said manufacturing method comprising the steps of:

inserting said lens into said first hole and fixing said lens; and

press-fitting a given length of said ferrule into said second hole, said ferrule having an optical fiber embedded therein.